

## USER DEPENDENT PARAMETERS CAN MARKEDLY INFLUENCE APPARENT INFARCT SIZE ON MRI

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MRI can assess viability at a resolution and sensitivity that exceed all available clinical imaging techniques. The transmural extent of infarction is an important determinant of contractile function after revascularization. We studied how apparent infarct size changes as a result of incorrect selection of inversion time. **METHODS:** Twenty-five patients with myocardial infarction were imaged with an inversion recovery prepared fast gradient echo sequence after 0.2 mmol/kg gadolinium. After locating a slice of myocardium with abnormal delayed hyperenhancement, this slice was repeatedly imaged with identical parameters other than intentionally adjusting the inversion time (TI) in 25 ms increments away from the TI that optimally nulled normal myocardium. Raw MRI data was processed using conventional magnitude reconstruction. The same data was reconstructed using phase sensitive reconstruction. The apparent size of myocardial infarction was measured by computer-assisted planimetry. **RESULTS:** Figure 1 illustrates that the apparent infarct size decreases proportionately on conventional magnitude reconstruction images (diamonds). Magnitude reconstruction underestimated infarct size at  $-100$ ,  $-75$ , and  $-50$  ms ( $p < 0.001$ ) but not significantly at  $-25$  ms ( $p = 0.10$ ). Using phase sensitive reconstruction of the same raw data, infarct size remained unchanged over the range of inversion times selected (circles). Qualitatively, phase sensitive images were equivalent or superior to the magnitude images in 24 of 25 subjects. **CONCLUSIONS:** Although MRI is extremely powerful for defining extent of infarction, user dependent parameters can markedly influence the apparent infarct size. Phase sensitive reconstruction minimizes the influence of inversion time on apparent infarct size.

